

NOTES ON THE BREEDING OF THE GROUND DOVE
IN FLORIDA

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During the spring of 1930 I had a wonderful opportunity to study the nesting habits of several pairs of Ground Doves (*Columbigallina passerina passerina*) on the U. S. Laboratory Experiment Grounds, at Orlando, Florida, while doing special work on the eradication of the Mediterranean Fruit Fly.* Some very interesting facts were brought to light on the domestic habits of this beautiful little dove, which I felt should be passed on to others.

I do not pretend to give a complete life history of the species, but simply am giving my observations as I found them on this small plot of about three acres, which was planted in the main to citrus trees, though many other species of plants, introduced and native, are growing on the grounds. The station is located in the heart of the city, and much traffic passes hourly.

There were five pairs of these doves nesting on the grounds at the same time, and all in trees or shrubs. Ordinarily these doves nest equally either in trees or on the ground. They do not seem partial to either. On only one of the nests were observations made in detail from the beginning of nest-building and continued until the young left the nest. I was hampered by the lack of time, and give only fragmental data on other nests observed.

During the early part of February I first noticed six to eight Ground Doves feeding together on the ground in front of my car, as I drove up to the grounds at 8:00 A. M. They all fed within a few yards silently and peaceably. This was noticed upon a number of occasions, until the latter part of February when they began to pair off and began the plaintive wooing calls which were kept up all day long. In wooing on the ground, the male chases the female by rapidly walking after her with lowered head uttering low short notes sounding like *wuut, wuut*, or *woot, woot, woot*, flitting his wings ever so slightly as he goes. When he comes too near she rises and flies a few yards and he does likewise, repeating the actions described. The actual mating I have witnessed but once, over thirty years ago, and I do not recall the details, but remember it was consummated on the branch of a hawthorne tree, (*Craetegus*). Just before nesting a pair will often be seen sitting side by side, with bodies touching, facing the same direction, on the limb of a tree, on fences, or on line wires.

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The male is very devoted and assists fully as much as the female in nest-building, and especially in incubating and caring for the young. The male carries material to the nest and helps place it, as does the female, and both are found close to the nest before the eggs are deposited. After the eggs have been laid, only one bird is seen about the nest except during the changing of places on the nest. The male rarely gives his mating *coos* when incubation begins, but about the time the young are ready to leave the nest he begins to call, and it is not long before another nest is started or the old nest re-used. Sometimes the same nest is used four times consecutively in a single season. This habit of using the nest over and over again during the season was not known to me until this year.

Although the birds are ordinarily peaceable, rival males bristle with anger when in pursuit of the same choice for a mate. Recently I saw two smitten males fighting for their choice. One would run toward the other with upraised wings uttering angry sounding sharp *wut, wut, wut, wut* notes, but this seemed to be the extent of their vengeance. A Florida Blue Jay alighted upon the ground not far from a dove that I had flushed from the nest. The dove with both wings raised high above its back ran rapidly toward the jay, putting it to flight. Usually nesting doves are very timid and leave the nest when you are near, but one courageous male defended his domicile with astonishing bravery. I placed my hand in the nest and touched him, and immediately was struck a stiff blow on the hand by its upraised wings descending forcibly. Again and again this was repeated. I could grasp the bird and raise it clear of the eggs or young and replace it. Still it clung to the nest. This was, of course, very unusual, and it was the only experience of the kind encountered.

Pair No. 1. Ground Dove nest in orange tree eight feet above the ground, built in the old nest of the previous year. Found February 24, 1930, with female sitting on the nest at 11:00 A. M., but no eggs in the nest. February 25, at 3:30 P. M., female sitting on one egg. February 26, at 3:50 P. M., female sitting on two eggs. Bird was gentle and permitted me to stroke her back, which frightened her off. March 4, female sitting low to escape observation. March 6, female sitting at 11:00 P. M. and as the bird watched me, I reached up and stroked her tail feathers twice. She then flew to the ground ten feet away, fluttering about feigning lameness as she had done numerous times before. March 7, noted that both male and female took turns brooding; eggs still unhatched. March 8, eggs unhatched. March 9, nest not visited. March 10, parent brooding two tiny young. The

nest was watched for several hours from a distance and, as I did not see the parents making trips to nest, I had decided that the young were not fed so young. March 11, sometime between 9:00 A. M. and 9:45 P. M., while watching bird on nest, it began making jerky motions with the head and crop, and upon creeping up close I discovered for the first time that young doves were fed by regurgitation. The little one would wriggle from under the parent, coming just in front of it as the parent would raise its body slightly. The nestling would quiver and raise its head weakly and the parent (male) lower its head, and the young thrust its head firmly and deeply into the mouth of the parent. While in this position the male worked its head and crop violently while the regurgitation went on. The feeding progressed for two or three minutes, with various pauses, possibly to allow the young to swallow. Immediately upon disengaging, the young would settle down in front of parent to rest. Within four or five minutes this operation was repeated. The young were fed nine times within three-quarters of an hour, and remember they were only two days old. When satisfied the young would crawl back under the parent without assistance. I was able to stand within four feet in plain sight and watch. Forty-five minutes elapsed before he fed them again and this time only once. During some of these rest periods the parent touches the bill of the young, apparently giving it something. Although I was within a blind (later on during the observations) within three and one-half feet of the nest I could hear no audible sound by the parents, but when very young the nestlings give weak cheeps when hungry. Neither parent left the nest over ten minutes from the time the first egg was laid up to the present time. March 13, 1:20 P. M. Young with eyes open (they are closed the first day); even dull, cloudy skies seemed to affect their eyes and they would close them. Quills of primaries of both young about an inch long. March 14, 9:00 A. M. Female brooding. At 9:15 A. M. both parents in nest; female sitting and male standing on nest beside her. 11:30 A. M., male brooding. Today small short pin-feathers showing on tail, and two parallel ridges on back showing short quills. None on the head or other parts of bodies. Wing coverts about equal to the length of primaries. At 2:35 P. M. female brooding. At 3:05 male alighted on nest beside her and both flew at click of camera. Soon male sat on nest. Young not fed between 3:05 and 5:00 P. M. when I left, and they lay quiet. March 15, male brooding at 9:00 A. M., remaining on nest until 10:15 A. M. when female alighted on nest. After a few seconds he left and she settled down and at once began pulling up and

re-arranging the sides of nest. The male had been for the past half hour pulling at nest and trying to strengthen it. It had rained hard and the weight of the young had caused the nest to sag to a dangerous angle. Five minutes after male left the nest he returned and alighting on her back, with grass in his mandibles, reached over her head and placed it in front of her; she arranged it. He made five trips and acted the same. About six minutes after she arrived she began feeding one young but ceased when the camera clicked. At 11:15 young were examined and now showed sheaths on head, throat, thighs and two lines on the abdomen. None of the quills on wings had yet burst. Horny white tip on mandibles still intact. This presumably, is what aids the young in puncturing the shells, permitting them to escape. This plate is not shed on the twelfth day when they leave the nest. As it is not present in the adults, I can conceive of no other function it could perform.

As I handled the young they uttered low almost inaudible "cheeps". Male was on the nest at 1:15 P. M. and fed young and again at 2:25 P. M. Female exchanged places at 2:35 P. M. At 3:40 P. M. young crawled in front of female and she fed both at once. They had been quiet up to this time. (I looked at two other nests on the lot at 4:55 P. M. and all three were brooded by females).

March 16, 11:47 A. M., young quite active when handled in nest, facing in opposite directions. No feathers yet showing. March 17, female on nest with two young in front of her at 8:45 A. M. and had evidently been feeding. I went into blind at 9:00 A. M. and she fed them at 9:10. At 9:30 A. M. male came and sat in nearby tree and female left immediately. Male flew to nest at once and began feeding two young at same time. Both pleaded with weak cheeps and outstretched necks, until male opened his bill and both forced their bills as far down his throat as possible. He now pumped more vigorously and violently than on the first three days of feeding. Upon completion the young settled under him. At 10:30 A. M. male not been relieved. During this time the young came out from under male and stretched their wings and legs a number of times, also picked and pulled at the quills on their wings as if they hurt or itched. They did not appear hungry and did not beg for food, but soon after stretching crawled back under parent. One of the young during this time, stretched, turned tail to rim of nest and expelled excreta. Not once did the

parents carry away fecal matter from the nest, nor was it otherwise disposed of. This was allowed to remain in a ring upon the edge of the nest. As the nests are so frail it is possibly allowed to remain as a cement to strengthen it.

At 11:00 A. M. I examined the young and found the sheaths of the primaries, on one young only, had burst and were now showing feathers for the first time, which was the eighth day. There were fourteen feathers (only ten primaries) on one wing showing one-sixteenth to one-eighth inch. On the other wing of this nestling there were only twelve primaries that had broken through the sheaths, and were not quite so long as upon the other wing. No other quills on any other parts of the bird yet showed feathers. Male brooding at 12:20 P. M. I was gone from then until 1:30 P. M. About 2:15 P. M. it began to rain and I watched from a blind for fifteen minutes while it lasted. Female sat low upon the nest with head drawn in and eyes half closed. The water was shed easily from her feathers and she did not become soaked. One of the young with one side exposed to the elements, did not seek shelter. Male did not appear while it rained. At 3:45 P. M. male on nest and both young facing same direction. At 4:40 P. M. female brooding. Now found that the second nestling was showing numerous feathers on the primaries of both wings, however, they were not as long as those of the first bird. There were not any feathers showing on this young at 11:00 A. M. The nestling first showing feathers, now had much longer ones than it had at 11:00 A. M. The crops were very full and felt as if filled with small seeds, feeling rough to the touch.

March 18, at 9:00 A. M. female brooding. Young quite restless and stretched frequently, by exercising one wing then the other. Also the legs were stretched at same time. Pleaded for food but were not fed. About 9:15 A. M. female left the nest for the first time, since young were hatched, before the male arrived. About twelve minutes later male arrived and within half a minute began feeding both young at same time. I snapped picture and the young "froze" as if warned by parent, and remained thus for some minutes. After fifteen minutes the male fed only one young this time. The other seemed satisfied and lay quiet. This time it released the young three or four times, beginning over again. At 10:00 P. M. the female alighted on top of my blind just four inches above my head. She walked back and forth

uttering low *wuut, wuut*, notes. Male left nest when these notes were uttered, and female flew directly to nest. As she did so both young flapped their wings rapidly, then she fed both at same time in the usual manner. At no time while in the nest were the young fed in any manner but by regurgitation. Young continually stretching and breaking tips of their quills with their beaks, by pulling and running them through closed bills. Male returned at 11:22 A. M. and pecked female lightly on the back three or four times before she would leave. Male fed immediately one young, and before it finished both were fed together. At 11:45 A. M. I examined the young and found feathers now showing for first time, on tail, but very short, also quite long on thighs, scapulars, and back. Feathers on these parts were not showing the previous day. The secondaries and primaries now quite long. The young now had a habit of snapping their mandibles when handled, but this was not noted when they were unmolested in nest. Parents today for first time "talked" softly to the young.

Saw repeatedly the manner in which the quills were broken. The young would peel off large scales at a time and were now continually pulling at sheaths. Neither parent aided in this work.

From time the first egg was laid, the approach to the nest was essentially the same—the returning bird would always alight near the nest, making one to three short flights from branch to branch before alighting upon the nest. March 19, at 9:00 A. M. the female was brooding and at 1:20 I flushed her while trying to touch her and she did not return. Young left unbrooded for three-quarters of an hour when the male arrived. He gave his mating calls for the first time since the eggs were laid, near the nest before flying to it. Probably her absence disturbed him. When upon the nest he gave low almost inaudible *coos*, as if talking to the young. They cheeped in return. He began feeding one and before it finished the other began to plead and reach for his bill while the feeding young tried to fight it off by widely spreading its wing. However, the male finally fed both simultaneously. The young were more restless than usual today, and moved about considerably.

Desiring a better light, I parted the branches above the nest and the sun shone down intensely upon the young. The young seemed to suffer much from the heat and their throats palpitated rapidly, as if panting. When the male returned, he viewed the unfamiliar sun-covered nest with suspicion. He uttered rapid and numerous *wut, wut wut* notes before alighting on the nest. Very soon the heat proved too much for the male and he also began to "pant" which was evidenced

by palpitations of the throat and mandibles widely distended. He wisely and with much solicitation, stood in a position which best shielded the young from the scorching rays of the sun. This was the only time suffering from heat was noted, and I soon placed the branches in former position. Within a few minutes the panting of the young ceased and when the male returned he evidenced no suffering. This incident explained to me why Ground Doves select shady nesting sites.

Today very short feathers were now appearing on the head, throat, and sides of the neck. The eyes were brown—quite unlike those of the adults. There were now sixteen feathers on the primaries showing the reddish-brown color as in the adults. These were the only feathers exhibiting such color. The general color of the feathers was now something similar to that of the adults, but paler, and each feather edged at tip, with grayish-white. Purplish-black spots showed prominently on secondaries and scapulars. Bill horn-color and the white horny knob still present. I may say this had not disappeared when the young finally left the nest.

At 10:50 A. M. after handling one of the young it flew from the nest several yards, alighting upon the ground, where it ran several feet. It was replaced in the nest and remained there. At 11:40 A. M. the female was brooding. When trying to touch her she flew to the ground below, feigning lameness by fluttering her wings and crawling along the ground, uttering peculiar notes with a nasal twang difficult to describe. She uttered these notes only after the young were hatched. These are notes of anger.

March 20, at 9:00 A. M. the young in the nest but parents absent. Female on nest at 10:30 A. M. Male on nest at 11:30 A. M. Male on nest at 12:05 P. M. About 3:30 P. M. upon visiting the nest I saw a Florida Blue Jay just two feet above the nest inspecting it. The dove was in a fighting attitude with highly upraised wings. Frightened by me the jay flew. The male gave his mating calls quite frequently today. More so than at any time since incubation began.

March 21, at 9:00 A. M. the male sitting on nest with the two young which were practically fully feathered sitting on edge of nest in front of parent. During the past two days the parents did not pretend to cover the young, and were often absent for long periods, contrary to the earlier life of the nestlings. At 12:10 P. M. male sitting beside young permitted me to watch it only two feet away and as I put my hand within four inches of him, he flushed and fluttered on the ground beneath. Both young upon being touched now launched from the nest

and flew fully thirty feet. I caught and replaced one in the nest and it remained quiet, but could not find the other nestling. When visiting the nest at 2:30 P. M. I was surprised to find that the other young had returned to the nest. Both were now there, sitting beside the male. Young were now nicely feathered but rather bare in spots on belly and thighs.

At 3:45 P. M. I found a parent and the two young in the nest, but becoming alarmed they all flew away. Returning once more at 5:10 P. M. I found the nest empty and could see nothing of the happy family. I visited it the next morning and the following day but nothing more was seen of them, so I took it for granted that twelve days must be the time required for young doves to remain in the nest, before venturing into the world.

The Re-use of This Nest. On April 12, 1930, I went by this nest and examining it, thought that I detected a few new pieces of fresh grass. Two hours later my suspicions were fully confirmed as I now found the old structure completely renovated. Much grass had been added and it appeared as if ready for eggs. April 14, at 9:00 A. M. I found the female sitting upon one egg. At 1:30 P. M. she still sat upon the single egg. April 15, at 7:45 A. M. female still sitting upon one egg, but at 10:50 A. M. she sat upon two eggs. On April 16, I stood in the blind as female sat upon the nest. I set my Graflex at one-twenty-fifth of a second, and the picture shows how rapid and responsive these birds are to disturbances. Before the shutter closed she had been able to raise her wings. She had been sitting quietly upon the nest. The 18th of April revealed a bird tragedy. I found body feathers of a dove scattered on the ground and in the nest. One broken egg remained in the nest and the other smashed upon the ground below; mute testimony of a desperate struggle. Whether the marauder was a cat or an owl, I cannot say.

Off and on all that day the male kept up his calls in the vicinity of the nest, waiting in vain for an answer that would never come. I have watched this nest since and up to August 5, it has not been used.

Pair No. 2. A Ground Dove nest ready for eggs found eight feet up in a small orange tree about the center of the tree in a dense shade, on south side of the Laboratory, February 28, 1930. Female sitting upon the nest at 8:24 A. M. and flushing found the nest empty. She was back upon the nest at 8:40 A. M., remaining until 12:00 A. M. when

again flushed. No eggs yet. Nest visited about 3:30 P. M. and still no egg. Female upon the nest at 5:15 P. M. but not disturbed.

March 1, at 9:00 A. M. I discovered the first egg. Bird on nest at 5:00 P. M. sitting on the single egg. This was evidently laid early in the morning. Did not visit nest Sunday, March 2; on March 3, at 8:20 A. M. found female sitting upon two eggs. Today the eggs were left uncovered for several hours, which is quite unusual. They are rarely left uncovered even when there is only one fresh egg. On March 10, about 11:00 A. M. I was surprised to find the male standing upon the back of the brooding female. They both flew. He was probably just going to exchange places with her when I approached.

March 12, at 3:05 P. M. I examined the eggs and found no signs of hatching. March 13, 9:25 A. M. female sitting. Found one of the eggs with very small break in center. The other not yet pipped. At 5:15 P. M. both eggs now pipped. March 14, at 8:25 A. M. neither egg yet hatched. At 11:30 A. M. still unhatched. At 2:30 P. M. one young apparently just emerged and was wet. No eggshell in nest. Parent brooding and flushed. Back upon nest within four minutes. At 3:04 P. M. the second egg had hatched and two young in nest. No signs of eggshells in nest or on the ground. Parent seen to expel fecal matter over side of the nest. That of the young is allowed to remain upon rim of nest in a circle.

March 15, at 11:00 A. M. eyes of neither young yet open. Very faint sign of primaries (quills) showing. Male brooding. At 4:10 P. M. eyes still closed. No noticeable development of quills since 11:00 A. M.

March 16, at 10:45 A. M. female brooding. Eyes of young barely open. Primaries still very faint. No quills showing on any other parts of their bodies. March 17, at 12:00 P. M. the primary quills now showing fully one-sixteenth of an inch. Quills on secondaries now barely perceptible. Male brooding. March 18, at 1:15 P. M. male brooding. The secondaries and primaries now had grown to about one-half inch. Secondaries only a trifle shorter than primaries. Patches of quills now showing on scapulars. Two ridges along the backs showing a few tiny quills. None elsewhere on bodies. Fledglings uttered weak almost inaudible cheeps.

On March 25, I found only one young left in the nest. The other nestling must have been taken by either a Blue Jay, Catbird, Brown

Thrasher, or Shrike. A cat would have taken both. I did not observe this nest further until they used it again.

The Re-use of This Nest. On May 13, 1930, upon visiting this nest, I found the female sitting upon one fresh egg, and the next day there were two eggs. I have strong reasons for believing that the majority of the doves in this plot repeatedly nested in their old nests. Later on in this article I offer conclusive proof that at least one of these pairs nested twice during the season in the same nest. There is no reason to think that any other pair but the owners of these nests would re-use them. Therefore I am presuming this to be the case. On May 27, at 1:00 P. M. one of the two eggs found pipped. May 28, at 9:30 A. M. now one young and one pipped egg. Male brooding. At this time the egg was slightly broken on one side one-fourth way down from end. At 11:30 A. M. male brooding. Egg now nearly encircled with perforations near one end, forming almost a complete ring. I believe these broken places are made by forcing the horny tip of the mandible through the weakened shell. When male was frightened from nest at 11:30 it did not return until 12:15 P. M. as I sat near watching the nest expectantly. At 11:45 A. M. the egg popped open and the head of the young shown. For several minutes the clinging shell could be seen moving about, now up, now down, caused by the actions of the struggling young. I went inside and watched from a window twenty feet away. The male returned at 12:15 P. M. and did not settle down on nest. It immediately picked up a section of the shell, giving it several hitches to insure a firm hold, and flew to the westward. The round trip consumed about thirty seconds. Again this was repeated but this time it flew over the Laboratory to the northward. The time was the same. He now appeared very shy, standing alert and erect upon the nest for several minutes. After turning around on the nest several times he settled down to brood. He did not offer to feed the young at that time. I then went to lunch. Observing the nest between 1:30 P. M. and 2:00 P. M. the male fed the young or a young (I could not be sure) a little at a time at frequent intervals. The young would crawl out in front of him and when satisfied crawl back. The violent motions of neck and head were not indulged in at this tender age, and his actions were quite mild compared to later feedings when the young were older. Lice or mites seemed to be bothering the brooding bird and he would peck frequently at some-

thing on the edges of the nest. This was noted in other dove nests. Whether the youngest bird was being fed, I was unable to determine. This gave me an idea. I removed the oldest nestling and watched from a tree nearby. Five minutes later the male returned to the nest and apparently detected no loss and settled down to brood. It fed this young twice between 2:45 p. m. and 2:55 p. m. In all probability it had been fed prior to this, but I was now positive that the young are fed at least within the first three hours of their lives.

Up to August 5, this nest was not used again. However, a nest with two perfectly fresh eggs, in an old Brown Thrasher nest, thirty-five feet south of this old site, found on August 5, may or may not have belonged to this pair.

The following notes on nests on this plot will give some idea of the frequency with which these doves re-use their nests, and the time elapsing between each brood. As I have given fairly complete details on two pairs, I will only give brief data on the others.

Pair No. 3. On February 28, 1930, on the east side of the Laboratory, a pair of Ground Doves were building a nest about two and one-half feet above the ground in a cinnamon tree, shaded by a tung oil tree well back among the shadows. March 1, at 9:00 a. m. female on nest but no eggs. At 10:05 a. m. female flushed off nest but no eggs. Male within a few yards of the nest on the ground, several times prior to this time. March 3, at 8:20 a. m. bird sitting upon one egg. At 1:00 p. m. female on nest with the one egg. Late during the afternoon I visited the nest and found the egg gone. Some roving bird had robbed the nest but I could never catch the marauder. Bird not about. This is the reason that these doves can not leave the nest for long. A Catbird and Brown Thrasher frequently were seen in the tree and either may have been the guilty one.

On April 7 this same nest held two fresh eggs. There were none in the nest on the 5th. On April 19, at 8:45 a. m. both eggs found to be pipped; at 11:30 a. m. neither hatched. Visiting the nest at 1:45 p. m. found both eggs hatched and no sign of eggshells. On April 21, I found one young missing. The remaining one was safely reared. To August 5th, this site was not used again.

Pair No. 4. On March 29, 1930, a Ground Dove was seen building a nest on the inside of a 1929 Brown Thrasher's nest, in an orange tree seven feet above the ground. This tree was near the entrance gate of

the insectory, and within three feet of the pathway, where many passed daily. One of the men who watched the building of this nest related the following: "One bird remained in the nest while the other brought material to it which was arranged by the stationary bird. This was repeated many times." I have no reason to doubt his word, as he has raised pigeons and was interested in watching this pair of doves. On March 31, the female sat upon two fresh eggs. April 12, by 9:20 A. M. I found one young and one pipped egg in the nest. At 2:30 P. M. there were two young.

This was a remarkably courageous pair of birds and from their behavior I concluded the same pair used the same nest for a second brood.

I could reach up and touch the birds (parents) as they sat brooding, numerous times, when they sat upon eggs or brooded young. They would utter rasping nasal notes angrily, and raise their wings vertically, high above their backs, and strike a swift downward blow upon the hand. He or she would back to one side of the nest, refusing to leave it. I frequently lifted the bird, either male or female, off the nest and replaced it, without driving it away. No other pair of doves on the lot would stand for this, although I did touch several other nesting pairs. On the re-use of this nest later, these actions were duplicated. In view of this I feel safe in presuming that the re-use of all nests on this lot were by the original owners. The young left the nest on the 24th or 25th of April.

On June 2, this same nest held two young that hatched this date. As the eggs hatch in twelve or thirteen days, the first egg must have been deposited May 18 or 19, which was about three weeks after the first brood left the nest. There were no more eggs laid in this nest up to August 5.

Pair No. 5. On February 26, 1930, a dove nest found fifteen feet above the ground on a lattice-work of small branches of a tangerine tree, well shaded. February 27, the nest held two eggs. On March 11, at 5:05 P. M. female sitting on one pipped and one sound egg. On March 12, at 8:45 A. M. found that only one egg remained. This pipped. At 3:10 P. M. I climbed the tree and lightly touched the bird on the tail and she flew to the ground. There was now a yellowish young in the nest, which flourished and left the nest in due time. March 13, at 1:25 P. M. the eyes of the young closed, and tiny quills (primaries) barely in evidence. March 14, at 9:10 A. M. parent brooding; young still unable to open their eyes. Quills on wings now about one-sixteenth of an inch upon the second day. No other quills yet showing.

Color of bill dark horn-color; extreme tip whitish, and just back of tip on upper mandible is a little horny knob pure white and behind this the bill is encircled by a black narrow band. At 3:05 P. M. male brooding and female also at nest. Both young now barely able to open their eyes. Very short quills on wing coverts now obvious. March 15, today the quills showing on tail for first time. Male brooding and placed my hand within three inches of him before he flushed.

This nest was re-used and on April 2, I found a dove sitting upon the nest, which was empty. April 7, there were two fresh eggs and bird sitting. A Brown Thrasher's nest with three incubated eggs in same tree nine feet from the dove's nest. On April 12, the dove was still sitting upon the two eggs. I did not follow it up.

On May 12, this nest was again used, and the dove was sitting on two fresh eggs, which constituted the third set since February. I did not observe this further.

This nest was used a fourth time. On June 11, I found that fresh pieces of grass had been used to repair it, and on June 13, she was sitting on two fresh eggs. I did not look into this nest until June 24, and found the nest empty and deserted. The Brown Thrasher was again using her old nest in this tree, making her second brood.

Pair No. 6. On May 27, 1930, I found a Ground Dove nest built upon an old Cardinal nest in a tangerine tree fourteen feet above the ground. It held two young eight or nine days old.

She laid in this nest again and on June 10, there was one egg and on June 11, a second egg was laid. On June 24, one egg hatched and the other was found to be infertile.

On August 5, I flushed a dove off this nest which held one lone well incubated egg.

Pair No. 7. On March 17, 1930, I found a Ground Dove building a nest nine feet up in a calamondin tree. March 18, bird on nest arranging it and quite a bit more had been added. March 19, bird worked on nest today. March 20, at 9:10 A. M. bird sitting on nest, no eggs. At 12:15 P. M. was absent. At 5:15 P. M. bird sitting, but did not disturb her. March 21, at 8:40 A. M. female sitting upon one egg. This was either deposited late in the afternoon of the 20th; or prior to eight o'clock on the 21st. At 12:05 P. M. I visited the nest and found it deserted and egg gone. The work of egg-eating birds again. I do not believe that the loss of eggs and young would have been so great, had I left the birds undisturbed. This is the reason that the nest is rarely left unattended.

Pairs No. 9 and 10. On August 5, 1930, I found two more nests on the grounds. One nest was four feet up in a sour-orange tree, built inside a Cardinal nest of the year. Male sitting upon two eggs incubated about two days. The other nest was built in a delapidated Brown Thrasher nest of the year, three feet up in a lemon tree. There were two quite fresh eggs.

To complete my observations on the habits of these doves, I should add that two nests were built to completion that were abandoned. The cause I was unable to determine.

To give some idea of the popularity of this three-acre tract, and something of the environment in which these peaceful little doves lived I give a list of the birds nesting here on April 17, 1930. There were five occupied Ground Dove nests, two Mockingbird nests, one of the Florida Cardinal, two of the Brown Thrasher, one of the Loggerhead Shrike, and two of the Florida Blue Jay, a total of thirteen nesting pairs.

There were nineteen occupied Ground Dove nests up to August 13, 1930, since the commencement of the nesting on February 25. Of these, seven nests met with total or partial misfortune; one adult was killed (?) and the two eggs broken; another nest lost one young ten days old, another lost one young two days old; two lost one egg each, and another lost both eggs. I do not believe this is any criterion, however, as the birds were frequently disturbed by myself and others innocently. Where they are left to themselves the loss is not so great. Of the many nests that I have found in the field I do not recall a nest having less than two young. On several occasions three pairs of doves would be nesting within a radius of thirty-five feet. I once found seven or eight pairs of Ground Doves nesting in a scattered colony on the ground 150 feet back from the shores of Lake Munroe. One of these pairs had built a nest in a rust-eaten tin can which sheltered it. More often the nests are isolated, either on the ground or low in trees. Two nests containing three eggs each were found by my brother, Wray H. Nicholson. I have one of these sets in my collection.

In conclusion I might say that I expect these same pairs will be nesting again in September and into the early part of October. Thus it will be seen that they are quite prolific and nidification is carried on nine months during the year, at least.

ORLANDO, FLORIDA.